

Selenium and Gilbert Bay – William Moellmer, Utah Division of Water Quality
Submitted to the Great Salt Lake Advisory Council
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1. What is the problem?

Precipitation and watering (dust control) of the overburden and tailings at the Kennecott open pit mine has contaminated the ground water of the southwestern part of the Salt Lake Valley with high levels of sulfate. In order for this to be addressed, wells were installed ahead of the underground plume which is moving toward the Jordan River. The water from these wells will go through a reverse osmosis process to create drinking water which also creates a high brine "waste" stream which contains selenium. This stream with high sulfate and selenium needs to be discharged somewhere --- the Great Salt Lake. What is the effect of this waste stream on the Great Salt Lake and will it cause an impairment of the beneficial uses of the lake? Will this stream cause adverse effects upon the aquatic wildlife of the Great Salt Lake?

2. How are you funded?

The study to evaluate the potential effect of selenium upon the beneficial uses and the aquatic wildlife as jointly funded by EPA, Kennecott Copper, Friends of the Great Salt Lake, and the Utah Division of Water Quality. The total cost of the project was \$2.6 million dollars.

3. Who are your project partners?

The studies were conducted at the direction of a Great Salt Lake Science Panel utilizing scientists from Utah State University, the University of Utah, the University of Miami, and Weber State University in collaboration with scientists at the Utah Division of Water Quality. The Great Salt Lake Steering Committee oversaw the process and made recommendations to the Water Quality Board for an adoption of a site specific standard for selenium.

4. What can be done?

The Science Panel and the Steering Committee made recommendations to the Water Quality Board in 2008 that a site specific standard for selenium utilizing the concentration of selenium in shore bird eggs at the critical endpoint. The value of 12.5 mg/kg (dry wt.) was approved by the Water Quality Board with final approval being given on November 10, 2008 as a part of the triennial review. Other studies are still continuing, including a need to understand the dynamics of selenium transfer from brine shrimp cysts to the earliest stages of brine shrimp development.